

Amendments to the Drawings:

The drawing sheets attached in connection with the above-identified application containing Figures 21 and 22 are being presented as a new formal drawing sheets to be substituted for the previously submitted drawing sheets. The drawing Figures 21 and 22 have been amended.

The specific changes which have been made to Figures 21 and 22 are to include a PRIOR ART label for each of those figures.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Status of Claims:

No claims are currently being cancelled.

Claims 1, 5, 6, 8-10 and 12 are currently being amended.

Claims 19-21 are currently being added.

This amendment and reply amends and adds claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending and adding the claims as set forth above, claims 1-21 are now pending in this application.

Objection to the Title:

In the Office Action, the title of the invention was objected to because it was not sufficiently descriptive. By way of this amendment and reply, a new, more descriptive title is being presented for consideration.

Objection to the Drawings:

In the Office Action, Figures 21 and 22 were objected to because they require a PRIOR ART label. By way of this amendment and reply, replacement formal drawing sheets for Figures 21 and 22 are being presented, whereby those figures now have a PRIOR ART label.

Claim Objections:

In the Office Action, claims 5, 6, 10 and 11 were objected to, for the reasons set forth on pages 2 and 3 of the Office Action. By way of this amendment and reply, claims 5, 6 and 10 (claim 11 depends from claim 10) have been amended to overcome the objections to those claims.

Claim Rejections – Indefiniteness:

In the Office Action, claims 1-15 were rejected under 35 U.S.C. § 112, 2nd paragraph, as being indefinite, for the reasons set forth on page 4 of the Office Action. In reply, the presently pending independent claims have been amended to recite that the field plate portion has a visored shape that overhangs a gate side of said insulating film between said gate electrode and said drain electrode, as clearly seen in the figures.

Accordingly, presently pending claims 1-15 are fully compliant with 35 U.S.C. § 112, 2nd paragraph.

Claim Rejections – Prior Art:

In the Office Action, claims 9 and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent Application JP 09-307097 to Kawai; claims 1-6, 8, 10, 11 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai in view of Japanese Patent Application JP 2000-323495 to Tsukino; claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai in view of Tsukino and further in view of U.S. Patent Publication No. 2003/0020092 to Parikh et al.; claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai in view of Tsukino and further in view of U.S. Patent No. 6,483,135 to Mizuta et al.; claims 14 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai in view of Tsukino and further in view of U.S. Patent Publication 2001/0015446 to Inoue et al.; and claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawai in view of Tsukino and further in view of U.S. Patent Publication No. 2001/0017370 to Sheppard et al. These rejections are traversed with respect to the presently pending claims under rejection, for at least the reasons given below.

In a Group III nitride semiconductor transistor, a negative charge is generated in a semiconductor layer surface of AlGaN and the like. The negative charge acts directly on drain current to strongly affect the element performance.

The negative charge generated in the surface of the AlGaN and the like greatly affects FET characteristics depending on electric properties of a protection film (passivation film) deposited on AlGaN and the like.

Note also that GaN FETs are devices that are very sensitive to a surface state.

On the contrary, in a GaAs semiconductor transistor, a small amount of negative charge is generated. Thus, in a GaAs semiconductor transistor, electric properties of a protection film have a very minor affect on FET characteristics (see page 2, line 15 to page 3, line 3, and pages 6 to 11 of the specification).

Accordingly, one skilled in the art would not come to the conclusion that a multilayered film of a GaAs semiconductor transistor, as disclosed in Tsukino, would be useful for a Group III nitride semiconductor transistor. Therefore, one skilled in the art would not be motivated to use the multilayered film as disclosed in Tsukino as a replacement of the film disclosed in Kawai et al.

Furthermore, the multilayered film described in Tsukino is provided to inhibit impurity diffusion depth, and the multilayered film described in Tsukino is not provided for a Group III nitride semiconductor transistor that has an excellent balance between collapse and gate breakdown voltage.

Therefore, since one skilled in the art would not be motivated to combine the teachings of Tsukino and Kawai et al. as asserted in the Office Action, presently pending independent claim 1, as well as presently pending independent claims 8-10 and 12, are patentable over the cited art of record.

Still further, with respect to claim 4, the Office Action asserts that Tsukino teaches a dielectric constant of the insulating film being not more than 3.5. However, there is no such description about a dielectric constant of the insulating film in Tsukino.

Also, the Office Action asserts that the features recited in claims 5 and 6 are described in Tsukino. However, no such description exists in Tsukino concerning the features recited in claims 5 and 6.

Furthermore, with respect to claim 9, the Office Action asserts that Kawai describes dielectric constants of an insulating film of not more than 3.5. However, there is no such description in Kawai; rather, Kawai describes that a dielectric constant of SiO₂ film is 3.9.

Still further, with respect to claim 12, the Office Action asserts that features of that claim are described in Kawai. However, this is not the case, since only SiO₂ film is described in Kawai.

Presently pending claim 6 recites features seen best in Figure 4B of the drawings. See, in particular, the disposition of the first insulating layer 21 and the second insulating layer 22 in that drawing. Such features are not taught or suggested by Kawai or by Tsukino.

New Claims:

New claims 19-21 have been added to recite additional features of the present invention.

New independent claim 19 is similar to the features recited in claim 1, whereby new claim 19 also recites that a size of said field plate is not lower than 0.3 μm . The field plate size of not lower than 0.3 μm is not taught or suggested by the cited art of record, whereby claim 19 is patentable for these reasons, beyond the reasons given above for claim 1.

New claims 20 and 21 depend from claim 19, and recite features concerning a size of the field plate that are not taught or suggested by the cited art of record.

Conclusion:

Since all of the issues raised in the Office Action have been addressed in this Amendment and Reply, Applicants believe that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date April 17, 2008

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